RESPONSE/ARGUMENTS

The Non-Final Office Action of August 18, 2003 has been fully considered by the Applicants. In view of the foregoing amendments and following remarks, Applicants request that the objections and rejections of the pending claims be withdrawn and that a Notice of Allowance be issued.

The Examiner indicated that the numbering of the claims, which were filed in a preliminary amendment that cancelled the original claims, was not in accordance with 37 C.F.R. § 1.126. The Examiner stated that misnumbered claims 1-9, submitted with the preliminary amendment, have been renumbered 15-23. The listing of the claims reflects the renumbering. Additionally, the dependent claims have been clarified to reflect the correct dependency of the claims. Applicant notes that the amendments to claims 15-23 were not made for reasons related to patentability, but merely to accurately reflect the correct dependency in view of the renumbering of the claims.

The Examiner rejected claim 18 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner stated that it is unclear what is meant by "the metal further comprises a step of irradiating..." Applicants traverse this rejection.

Claim 18 has been amended to remove the word "metal" and insert the word "method." Thus, claim 18 now reads "the method further comprises a step of..." Applicants submit that, as amended, claim 18 particularly points out and distinctly claims what the Applicants regard as the invention. Applicants therefore request that the rejection of claim 18 be withdrawn.

Through a number of rejections, the Examiner rejected claims 15-23 under 35 U.S.C. § 103(a). In each of the rejections, the Examiner relied on U.S. Patent No. 6,414,214 B2 to Ohmori et al. ("Ohmori" or "the '214 patent"). Applicants note that the Ohmori reference issued on July 2, 2002, which is after the effective filing date of the present application, i.e., July 17, 1999, and does not qualify as 102(a) or 102(b) art. The Examiner, however, has not provided a basis for using the Ohmori reference. Applicants assume that the Examiner is using Ohmori based on 35 U.S.C. § 102(e). Ohmori claims priority to Provisional Application No. 60/115,149 filed on January 7, 1999, which would antedate the earliest effective filing date of the present application. *See* M.P.E.P. §§ 901.04, 2136.03(III). To be accorded the filing date of the provisional application as a prior art date under §102(e), the earlier filed application must have proper support for the subject matter upon which the Examiner is relying. *See* M.P.E.P. 706.02(f)(i), Section II, Example 2. The Examiner has not provided any support or information to indicate that the subject matter relied upon by the Examiner for the rejections is supported by the earlier filed application to which the '214 patent claims priority. Thus, Applicants cannot ascertain whether the '214 reference is a prior art reference. Applicants therefore submit that the rejections based on the '214 reference are not proper or adequately supported and request that the rejections be withdrawn.

Even if the '214 reference to Ohmori is prior art, in view of the following comments, Applicants submit that claims 15-23 are not obvious and are condition for allowance.

Claims 15-17 were rejected under 35 U.S.C. § 103(a) as being unpatentable over JP 10-155887 ("JP '887") in combination with U.S. Patent No. 6,414,213 B2 to Ohmori et al. Applicants traverse this rejection.

According to the Examiner, JP '887 teaches a method of purifying an oxygen containing gas comprising the steps of a first step of generating ozone in the oxygen containing gas, a second step of radiating ultraviolet rays of a medium wavelength of 200 nm or longer, but shorter than 300 nm, to the gas treated in the first step to form active oxygen, and a third step of radiating ultraviolet rays of a wavelength of 300 nm or long, but shorter than 380 nm, to the gas treated in the second step to convert the active oxygen into ground state oxygen. The Examiner acknowledges that JP '887 fails to teach a method wherein at least one of the second or third step is conducted in the presence of a photocatalyst including at least one of particles of titanium oxide of an orthorhombic crystal system or particles of titanium oxide of an orthorhombic crystal system supporting fine particle of another metal. The Examiner contends that the Ohmori reference teaches an interior member with titanium oxide particles containing brookite-type crystals to decompose an organic material or nitrogen oxide in air by photocatalysis of the titanium oxide particle.

Applicants submit that claims 15-17 are not obvious in view of the combination of JP '887 and Ohmori. The Examiner has provided no motivation to combine the references to arrive at a method that may include a step of radiating ultraviolet rays at a wavelength of 200 nm or longer but shorter than 300 nm in the presence of a photocatalyst. Ohmori only teaches the use of an irradiation energy of 365 nm to initiate photocatlytic activity. *See, e.g.,* U.S. Patent No. 6,414,213, col. 2, lines 4-6; Example 5; and, Claims 1, 3, 4, 5, 7-9. There is no teaching or suggestion of irradiating a gas, in the presence of a photocatalyst, at a wavelength other 365 nm. There is no teaching or suggestion in Ohmori that using wavelengths other than 365 nm would be advantageous. A person skilled in the art would not rely on Ohmori, even in view of JP '887, to arrive at a method for purifying oxygen that

includes a second step of radiating an ozonized gas with ultraviolet rays of 200 nm or longer, but shorter than 300 nm in the presence of a photocatalyst. In fact, Ohmori teaches away from wavelengths other than 365 nm. The inventors of the present development, however, have found that irradiating ultraviolet rays of a medium wavelength of 200-300 nm in the presence of a photocatalyst, after irradiating ultraviolet rays of a shorter wavelength of 110-200 nm, can purify a large quantity of soiled air effectively, even in the shadow portions of the ultraviolet lamp. There is simply nothing in Ohmori to suggest that such a step is advantageous. Thus, claims 15-17 are not obvious in view of the combination of JP '887 and Ohmori et al. Applicants therefore request that the rejection of claims 15-17 be withdrawn.

Claim 18 was rejected under 35 U.S.C. § 103(a) as being unpatentable over JP '887 in combination with Ohmori et al., and further in view of JP 10-249356 ("JP '356"). Applicants traverse this rejection.

Applicants submit that the combination of JP '887, Ohmori, and JP '356 fail to teach or suggest the method of claim 18. First, claim 18 is dependent from claim 15 and includes all the features of claim 15. As previously discussed a person skilled in the art would not be motivated to combine JP '887 and Ohmori to arrive at a method that may irradiate an ozonized gas at a wavelength of between 200 nm and 300 nm in the presence of a photocatalyst. There is nothing further in JP '356 to teach or suggest the method of claim 15. Because claim 15 is nonobvious, claim 18, which is dependent therefrom, is also nonobvious. *See In re Fine*, 837 F.2d 1071, 1076 (Fed. Cir. 1987) ("Dependent claims are nonobvious under section 103 if the independent claims from which they depend are non-obvious").

Moreover, a person skilled in the art would not rely on JP '356 to arrive at a method that includes drying an oxygen containing gas by irradiating the gas with

rays radiated from an infrared lamp and with rays radiated from a halogen lamp. The Examiner stated that JP '356 teaches a similar method to hold a fixed temperature. JP '356 is directed to water purification as opposed to purification of air. As such, there is no teaching or suggestion in JP '356 to dry an air sample. Further, there is no teaching or suggestion in JP '356 to dry an air sample using an infrared lamp and a halogen lamp. JP '356 only discloses the use of ultraviolet energy sources. There is no teaching or suggestion of infrared rays from infrared sources. Consequently, a person skilled in the art would not be motivated to modify any of JP '887, Ohmori and/or JP '356 to arrive at a method for purifying an oxygen containing gas that includes a method of drying an oxygen containing gas with both rays radiated from an infrared lamp and with rays from a halogen lamp. Applicants therefore request that the rejection of claim 18 be withdrawn.

Claims 19-21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over JP '887 in combination with Ohmori et al. Applicants traverse this rejection.

The examiner stated that JP '887 teaches a first treating room having a means for supplying an oxygen containing gas and a device for generating ozone in the oxygen containing gas, a second treating room having a device for radiating ultraviolet rays of a medium wavelength of 200 nm or longer but shorter than 300 nm, a third treating room having a device for radiating ultraviolet rays of a long wavelength of 300 nm or longer but shorter than 380 nm, and a means for discharging the oxygen treated gas in the third room outside the apparatus. The Examiner acknowledges that JP '887 fails to teach or suggest at least a part of a wall or surface of at least one of the second treating room or the third treating room to which the ultraviolet rays are radiated being covered with a photocatalyst. According to the Examiner, claims 19-21 would be obvious because Ohmori teaches an interior

member with titanium oxide particles containing a brookite-type crystal present on the surface can decompose organic material or nitrogen oxide in air by photocatalysis.

Applicants submit that claims 19-21 are not obvious because a person skilled in the art would not be motivated to combine JP '887 with Ohmori. As previously discussed, Ohmori only teaches using a photocatalyst in the presence of an irradiating energy from rays of 365 nm. There is no teaching or suggestion in Ohmori to use a photocatalyst in the presence of an irradiating energy, such as in the second treating room, produced from rays of longer than 200 nm but shorter than 300 nm. There is no indication in Ohmori that the use of such wavelengths would be advantageous such that a person skilled in the art would combine Ohmori with JP '887 to arrive at an apparatus as set forth in claims 19-21. In fact Ohmori teaches away from using wavelengths other than 365 nm. Thus, for these reasons and the reasons previously discussed with respect to the rejection of claims 15-17, claims 19-21 are not obvious in view of the combination of JP '887 and Ohmori. Applicants therefore request that the rejection of claims 19-21 be withdrawn.

Claim 22 was rejected under 35 U.S.C. § 103(a) as being unpatentable over JP '887 in combination with Ohmori et al., and further in view of JP '356. The Examiner acknowledged that JP '887 fails to teach further providing the third treating room with a drying room wherein a portion for irradiating the oxygen containing gas treated in the third treating room, with rays radiated from an infrared lamp and a portion for irradiating the oxygen containing gas treated in the third treating room, with rays radiated from a halogen lamp are installed in order. The Examiner contends that JP '356 teaches a similar method comprising heating the oxygen containing gas to hold a fixed temperature. Applicants traverse this rejection.

Applicants submit that claim 22 is not obvious in view of any of JP '887, Ohmori et al., and/or JP '356. Claim 22 is dependent from claim 19 and therefore includes all the features of claim 19. As previously discussed, Applicants submit that claim 19 is not obvious in view of the combination of JP '887 and Ohmori. As such, claim 19 which is dependent therefrom is also non-obvious. *See In re Fine*, 837 F.2d at 1076. For at least this reason, Applicants request that the rejection of claim 22 be withdrawn.

Additionally, JP '356 is directed to water purification as opposed to purification of air. As such, there is no teaching or suggestion in JP '356 to dry an air sample. Further, as previously discussed, there is no teaching or suggestion in JP '356 to dry an air sample using an infrared lamp and a halogen lamp. JP '356 only discloses the use of ultraviolet energy sources. There is no teaching or suggestion of infrared rays from infrared sources, much less the use of <u>both</u> an infrared lamp and an ultraviolet lamp. Consequently, a person skilled in the art would not be motivated to modify any of JP '887, Ohmori and/or JP '356 to arrive at a method for purifying an oxygen containing gas that includes a method of drying an oxygen containing gas with rays radiated from an infrared lamp and with rays from a halogen lamp. Applicants therefore request that the rejection of claim 22 be withdrawn.

The Office Action Summary notes that claims 15-23 were rejected. Applicants note that the Examiner has not formally addressed claim 23 in any rejection.

In view of the foregoing, Applicants request that the rejection of claims 15-23 be withdrawn and that a Notice of Allowance be issued.

Respectfully submitted,

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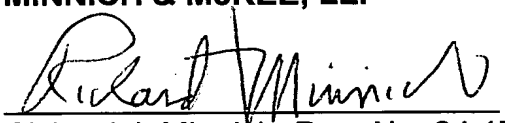

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